



# Visual Outcome and Complications of Resident Operated Phacoemulsification Cases Done by Third Year Residents in a Regional Institute of Ophthalmology

Garima Agrawal<sup>1</sup>, Swati Ravani<sup>2</sup>, Shashank M. Patel<sup>3</sup>

<sup>1</sup>Assistant Professor Ophthalmology, M&J Western Regional Institute of Ophthalmology, BJ Medical College, Ahmedabad; <sup>2</sup>Associate Professor Ophthalmology, M&J Western Regional Institute of Ophthalmology, BJ Medical College, Ahmedabad; <sup>3</sup>Professor & Director, M&J Western Regional Institute of Ophthalmology, BJ Medical College, Ahmedabad.

## ABSTRACT

**Introduction:** Phacoemulsification is a state of the art surgery for cataract removal. Phacoemulsification involves removing the opacified crystalline lens via emulsification and aspiration followed by implantation of an intraocular lens. The surgery though simple has a learning curve. We designed a study to document the visual outcome and complications of resident operated phacoemulsification cases done by third year residents in a regional institute of ophthalmology.

**Aim:** We designed a study to document the visual outcome and complications of resident operated phacoemulsification cases done by third year residents in a regional institute of ophthalmology.

**Material and Methods:** Phacoemulsification was performed by Junior Resident under guidance of one Assistant Professor. The visual outcome and complications of the procedure were noted.

**Results:** We report good visual outcome with few complications in supervised resident performed phacoemulsification.

**Discussion:** Phacoemulsification can be performed by Junior Resident in a supervised manner with good postoperative results. This has also been documented by other studies.

**Conclusion:** Phacoemulsification can be performed by Junior Resident in a supervised manner with good post operative results.

**Key Words:** Phacoemulsification, Resident cases

## INTRODUCTION

Phacoemulsification is a state of the art surgery for cataract removal. Phacoemulsification involves removing the opacified crystalline lens via emulsification and aspiration using an ultrasonic handpiece followed by implantation of an intraocular lens.<sup>1</sup> The surgery though simple has a learning curve. Jaffe NS et al in their book on Cataract Surgery observe that phacoemulsification brings with it unprecedented demands on the surgeon.<sup>2</sup> They report that surgeons need good manual dexterity, expertise with the operating room

microscope along with a thorough knowledge of intraocular anatomy and phacodynamics.<sup>2</sup> The beginner surgeons at our teaching Institute who have no prior experience of cataract surgery are therefore started with extracapsular cataract extraction followed by manual small incision cataract surgery before making them perform phacoemulsification. We designed a study to document the visual outcome and complications of resident operated phacoemulsification cases done by third year residents in a supervised manner at a regional institute of ophthalmology.

### Corresponding Author:

Dr. Garima Agrawal, Bunglow No. 11, Bopal 444, 200 feet Sardar Patel Ring Road, Bopal, Ahmedabad, Gujarat-380058.  
Mob: 9879795370; Email: garima.g.agrawal@gmail.com

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## AIM

The study is designed to document the visual outcome and complications of phacoemulsification surgery done by third year residents in a supervised manner at a regional institute of Ophthalmology.

## MATERIAL AND METHODS

Third year residents who have completed six months of their residency as junior resident three with satisfactory post operative results in at least five extra capsular cataract surgery and 20 manual small incision cataract surgeries were considered eligible for phacoemulsification. Mastery over capsulorrhesis was essential. Every case was supervised by one Assistant Professor with an experience of at least 1500 phacoemulsification surgeries with satisfactory post operative results. We documented twenty phacoemulsification surgeries performed by third year residents from July 2017 to December 2017.

Patient selection was done for beginner resident phacoemulsification cases. Patients with well dilated pupil, clear cornea, nuclear sclerosis grade two or three with normal ocular surface were included in the study. Exclusion criteria included nuclear sclerosis grade one, nuclear sclerosis grade four or five, semi-dilated pupil, corneal opacities, other ocular co-morbidities as glaucoma, ocular surface disorder, retinal disorders. Unicocular patients were excluded from the study.

All patients were subjected to a thorough pre-operative work-up including visual acuity, intraocular pressure, slit lamp examination and indirect ophthalmoscopy. Blood pressure was measured and complete systemic work up including cardio-respiratory status was done. Blood and urine investigations were ordered including complete blood count and random blood sugar. History of drugs including Tamsulosine was documented.

The pre operative preparation was done as per protocol. The surgery was carried out in the operation theatre. The student must have assisted at least 1000 phacoemulsification surgeries and performed few steps of phacoemulsification under guidance in at least 10 surgeries in conjugation with one Assistant Professor. A thorough knowledge of pharmacodynamics was essential for the student.

We use a standard phacoemulsification technique. A temporal clear corneal incision is made. Two side ports are constructed. Capsulorrhesis and hydroprocedures are performed. Koch's stop and chop technique is employed at our institute.<sup>3</sup> Nuclear emulsification is followed by cortical removal. Foldable intraocular lens is then inserted followed by viscoelastic wash and closure. Every step of the surgery was closely supervised by one Assistant Professor. All intra-

operative complications and their management were documented. Postoperative visual acuity was documented at first day post operative, one week and six weeks. Best corrected visual acuity was documented at six weeks. Postoperative complications were documented.

All patients were given topical antibiotics, steroids and lubricating drops postoperatively for six weeks as per protocol.

## RESULTS

Residents were able to perform phacoemulsification under guidance. They were able to perform incision, capsulorrhesis, hydroprocedures, trench making. Initially help was needed in the first cracking of the nucleus. Later they were able to chop and emulsify the nucleus pieces. Irrigation aspiration was supervised though complications were common if resident was not careful. Intraocular lens insertion went successfully. The coordinated management of resident and assistant professor were able to give good postoperative results. We concentrated on teaching the residents one step in every surgery, taking over the other steps as per the case to achieve good post operative results.

Twenty resident phacoemulsification cases were documented. Posterior capsular rent was noted in one case while emulsifying the last nuclear segment. It was managed with anterior vitrectomy, followed by intraocular lens implantation. Subsequently cortical and viscoelastic removal was done in a supervised manner. There were no major intraoperative complications in nineteen cases.

The postoperative best corrected visual acuity as documented at six weeks was 6/6 in seventeen cases. Three cases had best corrected visual acuity of 6/18, 6/24, 6/18 due to dry age related macular degeneration.

There were no major post operative complications. Mild corneal edema was noted in eight cases which resolved at one week postoperative with topical steroids.

## DISCUSSION

We report good visual outcome with very few complications of resident performed phacoemulsification cases under close supervision.

Randleman JB reported quality visual outcomes of resident performed phacoemulsification cases. They reported intraoperative complications in 5% cases with significant reduction in vitreous loss rates after the first eighty resident cases. Surgical competency improves significantly with increasing surgical experience.<sup>4</sup>

Thomas R et al reported an acceptably low rate of surgical complications and good visual outcomes by residents learning phacoemulsification in a supervised manner.<sup>5</sup>

## CONCLUSION

Resident performed phacoemulsification cases had good visual outcome with few intraoperative and postoperative complications. We conclude that phacoemulsification can be performed safely by third year residents in a supervised manner with good visual outcomes and few complications.

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